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A new species of *Masarina* Richards 1962 from southern Africa, description of the female of *M. ceres* Gess 1997 and supplementary data on three other species of the genus (Hymenoptera, Vespidae, Masarinae)

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Abstract

A new species of *Masarina* Richards, 1961, *M. gabymariae*, associated with *Hermannia* (*Mahernia*) *diffusa* L., Malvaceae: Sterculioideae) is described from a relict patch of Swartland Granite Renosterveld at Darling in the Western Cape Province of South Africa and the hitherto unknown female of *M. ceres* Gess, 1997 is described from Graafwater in the same province. Supplementary collecting data are given for three other species of the genus, *M. hyalinipennis* Richards, 1962, *M. mixta* Richards, 1962 and *M. strucki* Gess, 1988.

Keywords

Southern Africa, taxonomy, floral associations

Introduction

Masarina Richards, 1962 is a genus endemic to the semi-arid to arid western half of South Africa and the south west of Namibia (see Gess and Gess 2010, Fig. 65). When erected by Richards the genus comprised three species, *M. familiaris* Richards, 1962

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(the type species), *M. hyalinipennis* Richards, 1962 and *M. mixta* Richards, 1962. Since then ten species have been added: *M. strucki* Gess, 1988, *M. ceres* Gess, 1997, *M. mixtoides* Gess, 1997, *M. namaqua* Gess, 1997, *M. parvula* Gess, 1997, *M. peliostomi* Gess, 1997, *M. tylocodoni* Gess, 1997, *M. aptosimi* Gess, 2005, *M. hermanniae* Gess, 2005 and *M. roberti* Gess, 2005. The presently described species, *M. gabymariae* Gess, constitutes the fourteenth known species of this once seemingly small genus.

The keys to species of *Masarina* Richards given in Gess (2005: 12-14) are here augmented to include the new species.

The notation used for expressing geographic co-ordinates is as in the gazetteer of *The Times Atlas of the World* (1981). The figures before the stop are degrees, those after the stop are minutes; the stop is **not** a decimal point.

Acronyms for institutions in which material is housed are:

AMG Albany, Museum, Grahamstown, South Africa; **BMNH** = Natural History Museum, London, England
FSCA Florida State Collection of Arthropods, Gainesville, United States of America
TMP Transvaal Museum (now known as Ditsong Museum of Natural History), Pretoria, South Africa.

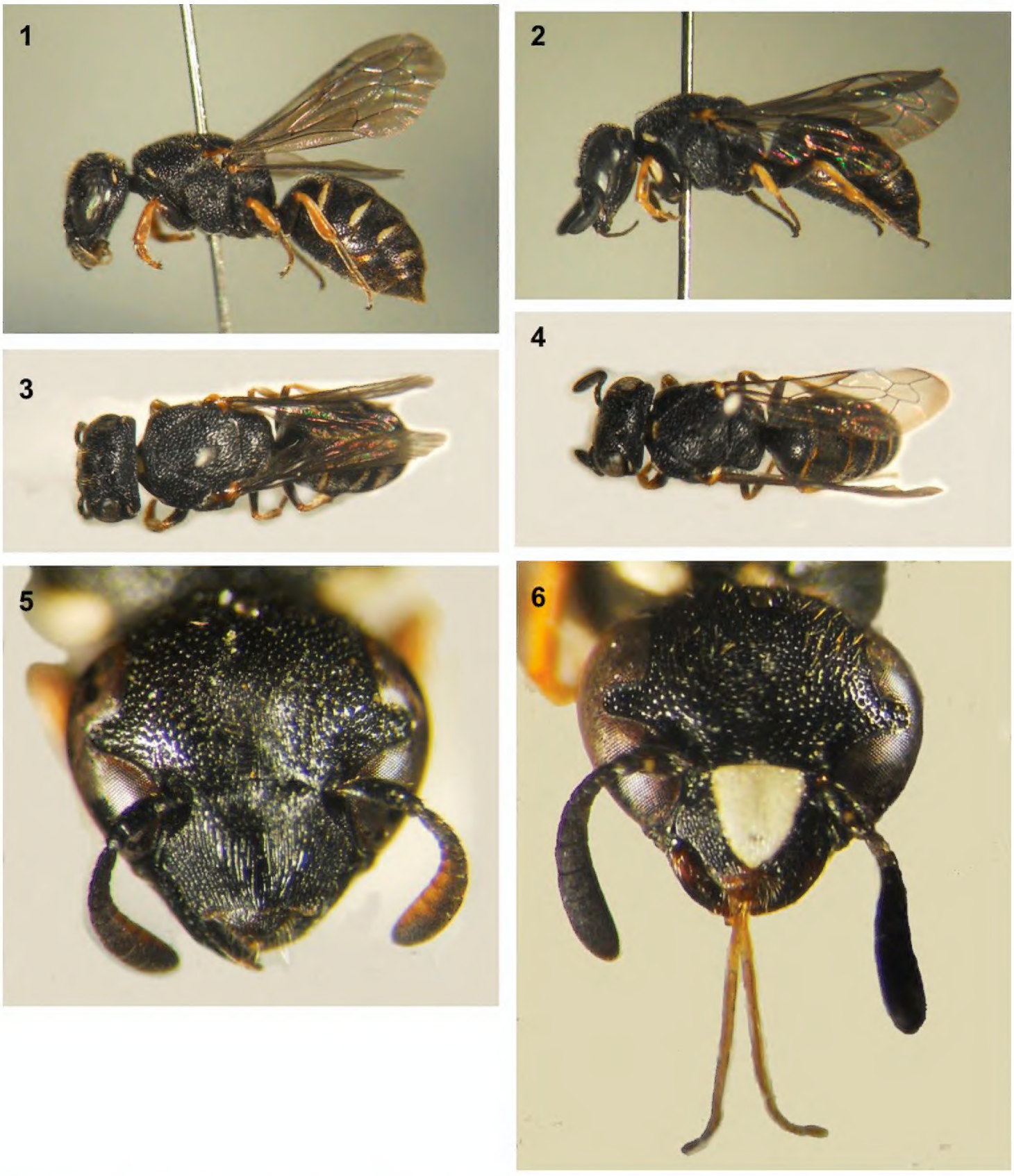
Taxonomy, distributions and floral associations

***Masarina gabymariae* sp. n.**
urn:lsid:zoobank.org:act:3BA97C99-3E82-49E6-B546-D9790ED6E05F
http://species-id.net/wiki/Masarina_gabymariae
Figs 1–6

Holotype. ♀, SOUTH AFRICA: WESTERN CAPE: Darling Renosterveld Reserve, Darling (33.23°S, 18.23°E), 25.ix.2011 (D. W., G. T. and G. M. Gess) (visiting red flowers of *Hermannia* (*Mahernia*) *diffusa* L. f., Malvaceae: Sterculioideae) [AMG].

Paratypes. Same locality and date as holotype, 1 ♀, 18 ♂♂ (1 ♀, 16 ♂♂ visiting red flowers of *Hermannia* (*M.*) *diffusa*; 2 ♂♂ on ground near plants of *Hermannia* (*M.*) *diffusa*); same locality, 1.x.2011, 1 ♀ (on ground near plants of *Hermannia* (*M.*) *diffusa*); same locality, 8.x.2011, 21 ♀♀, 23 ♂♂ (visiting red flowers of *Hermannia* (*M.*) *diffusa*) (all D. W., G. T. and G. M. Gess); same locality, 15.x.2011, 5 ♀♀ and 16.x.2011, 9 ♀♀ (visiting red flowers of *Hermannia* (*M.*) *diffusa* and on ground near plants of *Hermannia* (*M.*) *diffusa*) (all D. W., G. T. , G. M., F. W. and S. K. Gess); same locality, 20.x.2011, 1 ♀ (S. K. Gess) (visiting red flowers of *Hermannia* (*M.*) *diffusa*) – [all AMG].

Diagnosis. Length 6.0 – 6.7 mm. Both sexes with head, thorax and metasoma black with yellowish white markings; male in addition with characteristic shield-shaped marking on disk of clypeus and distal third of fore femur of this colour. Tibiae and proximal tarsomeres light ferruginous. Frons in lower half and disk of clypeus longitudinally aciculate (less markedly so in male than in female).



Figures 1–6. *Masarina gabymariae* **1** ♀, lateral view (actual length 6.7 mm) **2** ♂, lateral view (actual length 6.0 mm) **3** ♀, dorsal view **4** ♂, dorsal view **5** ♀, head, front view (actual width 2.1 mm), tongue not extended **6** ♂, head, front view (actual width 1.9 mm), tongue extended.

Description. *Female* (Figs 1, 3, 5): Black. The following are yellowish white: small streak on temple behind top of eye; small streak anteriorly on humeral angle; posterior bands, not attaining sides, on terga I–III (laterally anteriorly produced, medially either interrupted or very narrow and suffused with ferruginous). Ferruginous are: tip of mandible; tegula laterally and posteriorly (medially black); extreme apex of femur, tibia (except black cloud medially on fore tibia) and tarsomeres of all legs (last tarsomere

of fore leg and all tarsomeres of middle and hind legs, particularly last tarsomeres, darker than tibiae). Wings lightly infuscate; veins brown.

Length 6.7 mm; length of fore wing 4.2 mm; hamuli 6.

Head in front view 1.15 × as wide as long; POL: OOL= 1:1. Clypeus 1.35 × as wide as long; disk of clypeus basally raised above level of frons and of area below antennal insertion but with a longitudinal median depression (most marked on basal half) and with lateral wings depressed (most marked antero-laterally); depressed areas leaving on each side of disk a rounded elevation running obliquely from near antennal insertion to anterior margin and there meeting medially to form an obtuse projection into anterior emargination and effectively dividing it into two; antero-lateral angles of clypeus rounded. Frons in lower half longitudinally aciculate, finely so medially, more coarsely so laterally; clypeus over whole disk similarly longitudinally aciculate, finely so basally (particularly in median depression), more coarsely so elsewhere (particularly on lateral 'wings'). Frons and vertex with moderate, in part subconfluent, punctures; clypeus with a scattering of finer punctures, most discernable on raised areas.

Pronotum, mesoscutum, scutellum and mesopleuron similarly punctured to head but more coarsely so; terga more finely punctured than head.

Setation on head noticable, that on frons longest and mostly porrect, that on pronotum and mesoscutum shorter and mostly semi-decumbent.

Middle tibia with one spur.

Male (Figs 2, 4, 6): Black. The following are yellowish white: small spot at base of mandible (in small minority of specimens only); shield-shaped marking on disk of clypeus; small spot on scape (in small minority of specimens only); small streak on temple behind top of eye; narrow anterior band on pronotum; humeral angle; posterior bands, not attaining sides, on terga I – IV or V (that on tergum I widest, those of terga II – IV or V medially and laterally anteriorly produced; all bands medially suffused with ferruginous); extreme apex of trochanter and distal third of femur of fore leg; distal fifth of middle femur (in some specimens only). Ferruginous are: spot on basal half of mandible (in some specimens only); tegula anteriorly and posteriorly (medially very dark ferruginous to black); tibia and tarsomeres of all legs (last tarsomeres of middle and hind legs darker than others tarsomeres). Wings lightly infuscate; veins brown.

Length 6.0 – 6.4 mm; length of fore wing 4. 1 mm; hamuli 7.

Head in front view 1.14 × as wide as long; POL: OOL= 1: 1. Clypeus 1.4 × as wide as long; disk of clypeus evenly convex; anterior margin shallowly and evenly emarginate; antero-lateral angles narrowly rounded. Frons in lower half and disk of clypeus longitudinally aciculate but less markedly than in female. Punctation and setation as in female. Middle tibia with one spur. Parameres in dorsal view slightly incurved, with sides sub-parallel and with apices slightly down-curved and obliquely rounded.

Etymology. The name, in the genitive singular, is formed from the name of the collector of most of the present specimens, Gaby Maria Gess, my grand daughter, aged

eleven years, in recognition of her enthusiastic and diligent past and present collecting of Masarinae on my behalf.

Geographic distribution. Known only from the type locality, the Darling Renosterveld Reserve. This small municipal reserve is situated at the top (south) of the village and represents a relict patch of the Coastal Renosterbosveld of Acocks (1953) or, more specifically, the Swartland Granite Renosterveld of Mucina and Rutherford (2006). The latter authors note that the largest patch is centred on Darling and state that this is a critically endangered vegetation unit of which almost 80% has already been transformed due to the prime quality of the land for agriculture. Indeed, from the top of the Darling Renosterveld Reserve it may be seen that, apart from the village below, the surrounding countryside, with the exception of the tops of some hills too difficult to plough, is in all directions given over to wheat fields. If *Masarina gabymariae* should be restricted to the Swartland Granite Renosterveld and to the *Hermannia* growing there, it too may be considered as endangered.

Floral association. Malvaceae: Sterculioideae (*Hermannia* (*Mahernia*) *diffusa* L. f.).

Associated insects. Chrysididae: *Allocoelia quinquedens* Edney (unusually small and melanistic individuals), 25.ix.2011, 1 ♀ (on ground near *Hermannia* (*M.*) *diffusa*); 8.x,2011, 3 ♀♀ (1 ♀ visiting flowers of *Hermannia* (*M.*) *diffusa*; 2 ♀♀ on ground near *Hermannia* (*M.*) *diffusa*). All *Allocoelia* species are known to be parasitic exclusively in the cells of Masarinae; *A. quinquedens* has previously been found associated with *Masarina strucki* Gess at Bakleikraal near Kamieskroon, Namaqualand (Gess and Gess fieldnotes, 94/95/166).

Discussion. *Masarina gabymariae* is most akin to *M. strucki* Gess but differs most notably from it in the female by the shape of the clypeus, in the male by the characteristic pale shield-like marking on the same and, in both sexes, by the differently formed and coloured tegula.

The keys to species of *Masarina* **Richards given in Gess (2005: 12–14) are here augmented to include the new species.**

Key to females

6	Metasoma black with yellowish-white markings **6b**
–	Metasoma red with yellowish-white markings..... ***hermanniae* Gess**
6b	Clypeal disk with longitudinal median depression wide and deep from base to anterior margin; anterior margin with a wide, rounded median lobe .... ***strucki* Gess**
–	Clypeal disk with longitudinal median depression most marked on basal half, narrowing to anterior margin; anterior margin with a narrow, obtuse median lobe..... ***gabymariae* Gess**

Key to males

5	Metasoma black with yellowish-white markings; scape (usually), mandible (usually), labrum, frons black.....**5b**
–	Metasoma with terga roughly transversely banded, black anteriorly, red medially, and yellowish-white posteriorly; scape, mandible, labrum, clypeus, supraclypeal marking and ocular sinus yellowish-white .....***hermanniae* Gess**
5b	Scape and mandible black; disk of clypeus black, immaculate....***strucki*** Gess
–	Scape and mandible occasionally with pale spots; disk of clypeus with characteristic yellowish-white, shield-shaped marking.....***gabymariae* Gess**

Masarina ceres Gess

http://species-id.net/wiki/Masarina_ceres

Fig. 7

Masarina ceres Gess, 1997: 60, figs 23, 24, ♂; 71–73 (key to *Masarina*). Holotype: ♂, South Africa: Western Cape: 17 km N of Ceres, near top of Gydo Pass (AMG). – Carpenter 2001: 19 (listed); Gess and Gess 2003: 55 (flower visiting); Gess 2005: 11–14 (key to *Masarina*); Gess and Gess 2010: 45 (listed), 107(flower visiting).

Masarina sp. A: Gess S. K., 1996: 245, 293 (flower visiting).

Diagnosis. Length 5.7 – 7.5 mm. Both sexes with clypeus and adjacent part of frons slightly longitudinally depressed, moderately coarsely punctured, non aciculate; clypeus steeply raised from sides and disk markedly broad and short. Head, thorax and gaster yellow-marked.

Description. *Female* (hitherto undescribed) (Fig. 7): Black. The following are yellow: large transverse marking at base of clypeus; spot within ocular sinus; streak on temple behind upper part of eye; elongate transverse streak on humeral angle; mere indication of marking on postero-dorsal angle of pronotum; large mark on upper part of mesopleuron; posterior third of tegula; round spot on disk of scutellum; small median spot and larger, anteriorly convex, lateral spots on terga I – IV (markings progressively smaller from I – IV); large postero-dorsal spot apically on fore femur; streak dorsally on basal half or more (in case of fore tibia) of tibia of all legs. Various shades of ferruginous are: labrum; clypeus antero-laterally; distal half of mandible; antenna (upper surface dark, lower surface light); anterior two thirds of tegula; legs (other than for yellow markings); sterna.

Length circa 7.5 mm; length of fore wing 4.0 mm; hamuli 11.

Head in front view 1.3 × as wide as long; POL: OOL= 1: 1.1. Clypeus strikingly wide, 1.8 × as wide as long (measured to bottom of emargination), markedly raised from sides; disk slightly depressed in basal half, narrowly but more noticeably so antero-medially; anterior margin widely emarginate; lateral angles rounded, lamellate.

Punctation as in male. Setation on clypeus long, fairly dense.

Figure 7. *Masarina ceres,* ♀, head, front view (actual width 2.0 mm)

Material examined. SOUTH AFRICA: WESTERN CAPE: Graafwater [32.09S 18.37E], 15.xi.1990 (R. Miller and L. Stange), 1 ♀ [FSCA].

Discussion. In the keys to species of *Masarina* (Gess 1997, 2005) the female of *M. ceres* Gess, though at the time unknown, is included using presumed characters. Other than that the middle tibia has only one spur, not two as presumed and given as the second character in the last couplet, the characters are correct and the female runs down without difficulty.

***Masarina hyalinipennis* Richards**
http://species-id.net/wiki/Masarina_hyalinipennis

Masarina hyalinipennis Richards, 1961: 268, ♂; 268 (key to *Masarina*). Holotype: ♂, South Africa: Northern Cape: Vanrhynsdorp (as van Rhynsdorp) (TMP), Pretoria); Gess in Gess and Gess 1988: 352 (♀), 354 (key to *Masarina*); Gess S. K., 1996: 243, 297, 298 (flower visiting); Gess 1997: 71–73 (key to *Masarina*); Carpenter 2001: 19 (listed); Gess and Gess 2003: 56 (flower visiting, abbreviated collecting localities); Gess 2005: 11–14 (key to *Masarina*); Gess and Gess 2010: 45 (listed), 108 (flower visiting).

Additional material examined. SOUTH AFRICA: NORTHERN CAPE: Leliefontein (30.23°S, 18.16°E), 17.ix.2003, 1 ♀ (white trap); Leliefontein (30.23°S, 18.14°E), 23.ix.2003), 1 ♂ (yellow + white traps); Remhoogte (30.24°S, 18.17°E), 31.viii.2003, 1 ♂ (yellow trap), 5.ix.2003, 1 ♂ (white trap), 8.ix.2003, 1 ♀ (white trap), 11.ix.2003, 1 ♀, 1 ♂ (yellow trap) – (all C. Mayer) [AMG].

***Masarina mixta* Richards**
http://species-id.net/wiki/Masarina_mixta

Masarina mixta Richards, 1962: 271, ♀; 268 (key to *Masarina*). Holotype: ♀, South Africa: Northern Cape: Nieuwoudtville (BMNH); Gess in Gess and Gess 1988:

353 (key to *Masarina*); Gess S.K.1996: 243, 244, 280, 299, 300, 301 (flower visiting); Gess 1997: 71–73 (key to *Masarina*); Carpenter 2001: 19 (listed); Gess and Gess 2003: 57 (flower visiting, abbreviated collecting localities); Gess 2005: 11–14 (key to *Masarina*); Gess and Gess 2010: 45 (listed), 108 (flower visiting).

Additional material examined. SOUTH AFRICA: NORTHERN CAPE: Leliefontein (30.23°S, 18.16°E), 14.x.2002, 1 ♂ (white trap), 21.ix.2004, 3 ♀♀ (yellow trap); Remhoogte (30.23°S, 18.16°E), 7.x.2002, 1 ♂ (white trap) – (all C. Mayer); Sutherland district, Rooikloof Farm (32.26°S, 20.39°E), 30.ix.2009, 2 ♂♂ (visiting pale violet flowers *Wahlenbergia* near *polyclada* A. DC., Campanulaceae), 1.x.2009, 1 ♀, 2 ♂♂ (on ground between plants of *Wahlenbergia* near *polyclada*), 5.x.2009, 2 ♂♂ (1 ♂ visiting pale violet flowers of *Wahlenbergia* near *polyclada*), 8.x.2009, 2 ♂♂ (visiting pale violet flowers of *Wahlenbergia* near *polyclada*), 9.x.2009, 3 ♀♀, 3 ♂♂ (1 ♀ visiting pale violet flowers of *Wahlenbergia* near *polyclada*; 2 ♀♀, 3 ♂♂ from yellow pan traps associated with *Wahlenbergia* near *polyclada*), 10.x.2009, 2 ♀♀ (visiting pale violet flowers of *Wahlenbergia* near *polyclada*) – (all F. W. and S. K. Gess); same locality, 10.x.2009 (D. W. Gess), 1 ♀ (visiting pale violet flowers of *Wahlenbergia* near *polyclada*) – [all AMG].

Provenance of previously examined specimens as recorded in abbreviated form in Gess and Gess (2003). SOUTH AFRICA: NORTHERN CAPE: Richtersveld National Park; Kamiesberg; Nieuwoudtville. WESTERN CAPE: Clanwilliam; Clanwilliam/Graafwater; Clanwilliam/Citrusdal.

Floral associations. Campanulaceae (*Wahlenbergia*). Previously found associated principally with the flowers of various species of *Wahlenbergia*, less commonly with flowers of Fabaceae: Papilionoideae (*Aspalathus*), Malvaceae (*Hermannia* (*Mahernia*)), and Scrophulariaceae (*Peliostomum*) (see Gess and Gess 2003: 57).

Masarina strucki Gess

http://species-id.net/wiki/Masarina_strucki

Masarina strucki Gess in Gess and Gess 1988: 352, female. Holotype: ♀, South Africa: Northern Cape: Goegap Nature Reserve near Springbok (AMG); Gess 1997: 58, ♂, figs 19–22 (♀ and ♂ head, ♂ genitalia), 71–73 (key to ♀, ♂); Gess (S. K. *et al.),* 1997: 81–86 (flower visiting; nesting); Carpenter 2001: 20 (listed); Gess and Gess 2003: 57 (flower visiting, abbreviated collecting localities); Gess 2005: 12–4 (key to ♀, ♂); Gess and Gess 2010: 45 (listed), 109 (flower visiting), Figs. 67, 70, 71, 72 (nesting).

Additional material examined. SOUTH AFRICA: NORTHERN CAPE: Leliefontein (30.23°S, 18.14°E), 1.x.2003, 1 ♀, 6 ♂♂, 4.x.2003, 1 ♀ (yellow + white pan traps); Witwater (30.23°S, 18.13°E), 4.x.2003, 1 ♀ (yellow + white pan traps), 8.ix.2004, 1 ♂ (white pan trap) – (all C. Mayer) [all AMG]; Nieuwoudtville Flower Reserve East

(31.22°S 19.09°E) (730m),1.ix.2002 (M. Kuhlmann), 1 ♂, 5.ix.2002 (M. Kuhlmann), 1 ♂ [Kuhlmann Collection, London].

Provenance of previously examined specimens. See Gess and Gess (2003: 58).

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